



sequence listing.ST25.txt  
SEQUENCE LISTING

<110> Cano, Carlos Antonio Durante  
Nieto, Enrique Gerardo Guillen  
Acosta, Anabel Alvarez  
Munoz, Luis Emilio Carpio  
Vazquez, Diogenes Quintana  
Rodriguez, Carmen Elena Gomez  
Rodriguez, Recardo de la Caridad Siva  
Galvez, Consuelo Nazabal  
Angulo, Maria de Jesus Leal  
Dunn, Alejandro Miguel Martin

<120> Expression System of Heterologous Antigens as Fusion Proteins

<130> LEXSA P-13DIV2

<140> 09/612,925  
<141> 2000-07-10

<150> US 08/930,917  
<151> 1997-09-16

<150> PCT/CU97/00001  
<151> 1997-01-17

<160> 31

<170> PatentIn version 3.2

<210> 1  
<211> 1797  
<212> DNA  
<213> Neisseria meningitidis (group B)

<400> 1  
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ctgattactt tggaaccga taaagcgact atggagctac ctgctgaagt tgcaggccta 180  
gtcaaagaag ttaaagttaa agtcggcgac aaaatctctg aagggtggttt gattgtcgtc 240  
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tgctgaacg tcggctgtat cccttccaaa gccttgttgc acaatgccgc cgttatcgac 540  
gaagtgcgcc acttggtgc caacggtatc aaataccccc agccggaact cgacatcgat 600  
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gcgaaaagcc gtaaagtgga cgttatccaa ggcgacgggc aattcttaga tccgcaccac 720  
ttggaagtgt cgctgactgc cggcgacgcg tacgaacagg cagcccctac cggcgagaaa 780  
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ccggggcaaac tgctgattat cggcggcggc attatcagcc tcgagatggg tacggtttac    960
agcacgctgg gttcgcgttt ggatgtggtt gaaatgatgg acggcctgat gcaaggcgca   1020
gaccgcgatt tggtaaaagt atggcaaaaa caaaacgaat accgttttga caacattatg   1080
gtcaacacca aaaccgttgc agttgagccg aaagaagacg gcgtttacgt tacctttgaa   1140
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gcgcccaacg gcaaactcat cagcgcggaa aaagcaggcg ttgccgtaac cgatcgcggc   1260
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atcgtcggtc agccgatgtt ggcgcacaaa gccgttcacg aaggccacgt tgccgccgaa   1380
aactgcgccg gccacaaagc ctacttcgac gcacgcgtga ttccggggcg tgcctacact   1440
tcccccgaaag tggcgtgggt gggcgaaacc gaactgtccg ccaaagcctc cggccgcaaa   1500
atcaccaaag ccaacttccc gtgggcgggt tccggccgtg cgattgcaa cggttgcgac   1560
aacggcttta ccaagctgat ttttgatgcc gaaaccggcc gcatcatcgg cggcggcatt   1620
gtcggtcgga acggtggcga tatgatcggc gaagtctgcc ttgccatcga aatgggctgc   1680
gacgcggcag acatcggcaa aaccatccac ccgcacccga ccttgggcga atccatcggg   1740
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<210> 2
<211> 47
<212> PRT
<213> Neisseria meningitidis (group B)

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<400> 2

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Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile
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Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly
          20          25          30

```

```

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Glu
      35           40           45

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<210> 3
<211> 146
<212> DNA
<213> Neisseria meningitidis (group B)

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<400> 3

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taccctgatt actttggatc tagaaa

146

<210> 4  
 <211> 18  
 <212> PRT  
 <213> Neisseria meningitidis (group B)

<400> 4

Val Asn Val Gly Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu  
 1 5 10 15

Asp Leu

<210> 5  
 <211> 18  
 <212> PRT  
 <213> Neisseria meningitidis (group B)

<400> 5

Val Glu Val Gly Ser Lys Ile Tyr Val Asp Asp Gly Leu Ile Ser Leu  
 1 5 10 15

Gln Val

<210> 6  
 <211> 32  
 <212> PRT  
 <213> Neisseria meningitidis (group B)

<400> 6

Leu Val Glu Leu Lys Val Pro Asp Ile Gly Gly His Glu Asn Val Asp  
 1 5 10 15

Ile Ile Ala Val Glu Val Asn Val Gly Asp Thr Ile Ala Val Asp Asp  
 20 25 30

<210> 7  
 <211> 32  
 <212> PRT  
 <213> Neisseria meningitidis (group B)

<400> 7

Leu Arg Glu Val Gln Val Pro Asp Arg Lys Leu His Lys Gly Val Gln  
 1 5 10 15

Leu Leu Ala Gly Glu Leu Gly Ile Gly Glu Ala Leu Gln Val Asp Asp  
 20 25 30

sequence listing.ST25.txt

<210> 8  
 <211> 162  
 <212> PRT  
 <213> Neisseria meningitidis (group B)

<400> 8

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
 1 5 10 15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
 20 25 30

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Asp Ser  
 35 40 45

Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly  
 50 55 60

Gly Gly Ala Arg Gln Ser Thr Pro Ile Gly Leu Gly Gly Ala Leu Tyr  
 65 70 75 80

Thr Thr Ala Gly Gly Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly  
 85 90 95

Arg Val Ile Tyr Ala Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His  
 100 105 110

Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Ala Gly Gly Gly Ala Arg  
 115 120 125

Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly  
 130 135 140

Gly Gly Ala Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val  
 145 150 155 160

Thr Ile

<210> 9  
 <211> 489  
 <212> DNA  
 <213> Neisseria meningitidis (group B)

<400> 9

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 ctgattactt tggatctaga ctcgagaggc attcgtatcg gccaggtcg cgcaatttta 180

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gcaacagctg gcggtggcgc acgtcaatct acccctattg gtttaggtca ggctctgtat 240  
 acgactgccg gcggtggtgc gcgcaaaagt atcaccaagg gtccaggccg cgtcatttac 300  
 gccaccgcgg gcggcggtgc ccgtaagcgt atccacattg gcccaggccg tgcattctat 360  
 actacagcag gtggtggcgc acgtaaacgc atcactatgg gtcctggtcg cgtctattac 420  
 acgaccgctg gcggcggtgc tagcattcgc atccaacgcg gccctggtcg tgcatttgtg 480  
 accatatga 489

<210> 10  
 <211> 47  
 <212> PRT  
 <213> Neisseria meningitidis (group B)

<400> 10

Met Leu Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
 1 5 10 15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
 20 25 30

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Glu Thr Asp  
 35 40 45

<210> 11  
 <211> 27  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Primer 5' No. 1573

<400> 11  
 ttccatggta gatamagmtg gctttag 27

<210> 12  
 <211> 29  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Primer 3' No. 1575

<400> 12  
 tttctagatc caaagtaatc agggtatcg 29

<210> 13  
 <211> 26  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Primer 3' No. 2192

sequence listing.ST25.txt

<400> 13  
ggcggttctg ccgattaagg atccga 26

<210> 14  
<211> 146  
<212> DNA  
<213> Artificial

<220>  
<223> Derived fragment from the first 47 amino acids of the P64k antigen of N. meningitidis. The restriction sites NcoI (positions 3 to 8) and XbaI (positions 139 to 144) are introduced by PCR, which provokes changes in the nucleotide sequence of this

<400> 14  
ttccatggta gataaaagaa tggctttagt tgaattgaaa gtgcccgaca ttggcggaca 60  
cgaaaatgta gatattatcg cggttgaagt aaacgtgggc gacactattg ctgtggacga 120  
taccctgatt actttggatc tagaaa 146

<210> 15  
<211> 47  
<212> PRT  
<213> Artificial

<220>  
<223> Stabilizer fragment derived from the first 47 amino acids of the P64k antigen of N. meningitidis

<400> 15  
Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
1 5 10 15  
Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
20 25 30  
Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Glu  
35 40 45

<210> 16  
<211> 16  
<212> DNA  
<213> Artificial

<220>  
<223> Oligonucleotide used to introduce restriction sites XbaI, EcoV, and BamHI in the 3' end of the stabilizer fragment of SEQ. ID. NO. 13

<400> 16  
ctagatttga tatcag 16

<210> 17

sequence listing.ST25.txt

<211> 16  
<212> DNA  
<213> Artificial

<220>  
<223> Oligonucleotide used to introduce restriction sites XbaI, EcoV,  
and BamHI in the 3' end of the stabilizer fragment of SEQ. ID.  
NO. 13

<400> 17  
gatcctgata tcaaatt

16

<210> 18  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 18

Ser Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr  
1 5 10 15

<210> 19  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 19

Arg Gln Ser Thr Pro Ile Gly Leu Gly Gln Ala Leu Tyr Thr Thr  
1 5 10 15

<210> 20  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 20

Arg Lys Ser Ile Thr Lys Gly Pro Gly Arg Val Ile Tyr Ala Thr  
1 5 10 15

<210> 21  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 21

Arg Lys Arg Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr  
1 5 10 15

<210> 22  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 22

sequence listing.ST25.txt

Arg Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr  
1 5 10 15

<210> 23  
<211> 15  
<212> PRT  
<213> Neisseria meningitidis (group B)  
<400> 23

Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val Thr Ile  
1 5 10 15

<210> 24  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1  
<400> 24

Thr Ser Ile Thr Ile Gly Pro Gly Gln Val Phe Tyr Arg Thr Gly  
1 5 10 15

<210> 25  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1  
<400> 25

Arg Gln Arg Thr Ser Ile Gly Gln Gly Gln Ala Leu Tyr Thr Thr  
1 5 10 15

<210> 26  
<211> 5  
<212> PRT  
<213> Artificial

<220>  
<223> Spacer peptide that divides the various V3 epitopes in the MEPS  
TAB3, TAB4, TAB9, and TAB13

<400> 26

Ala Gly Gly Gly Ala  
1 5

<210> 27  
<211> 141  
<212> PRT  
<213> Artificial

<220>  
<223> Multiepitopic polypeptides that includes several copies of the  
central part of the variable region 3 of the gp120 protein of the  
HIV-1



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<400> 27

Met Ala Pro Thr Ser Ser Ser Thr Ala Gln Thr Gln Leu Gln Leu Glu  
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His Leu Leu Leu Asp Leu Gln Ile Phe Leu Ser Arg Gly Ile Arg Ile  
20 25 30  
Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly Gly Gly Ala Arg Gln  
35 40 45  
Ser Thr Pro Ile Gly Leu Gly Gly Ala Leu Tyr Thr Thr Ala Gly Gly  
50 55 60  
Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly Arg Val Ile Tyr Ala  
65 70 75 80  
Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His Ile Gly Pro Gly Arg  
85 90 95  
Ala Phe Tyr Thr Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile Thr Met  
100 105 110  
Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly Gly Gly Ala Ser Ile  
115 120 125  
Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val Thr Ile  
130 135 140

<210> 28

<211> 162

<212> PRT

<213> Artificial

<220>

<223> Multiepitopic polypeptides that includes several copies of the  
central part of the variable region 3 of the gp120 protein of the  
HIV-1

<400> 28

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
1 5 10 15  
Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
20 25 30  
Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Asp Ser  
35 40 45  
Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly

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50

55

60

Gly Gly Ala Arg Gln Ser Thr Pro Ile Gly Leu Gly Gly Ala Leu Tyr  
65 70 75 80

Thr Thr Ala Gly Gly Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly  
85 90 95

Arg Val Ile Tyr Ala Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His  
100 105 110

Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Ala Gly Gly Gly Ala Arg  
115 120 125

Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly  
130 135 140

Gly Gly Ala Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val  
145 150 155 160

Thr Ile

<210> 29  
<211> 202  
<212> PRT  
<213> Artificial

<220>  
<223> Multiepitopic polypeptides that include several copies of the  
central part of the variable region 3 of the gp120 protein of the  
HIV-1

<400> 29

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
1 5 10 15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
20 25 30

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Asp Ser  
35 40 45

Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly  
50 55 60

Gly Gly Ala Arg Gln Ser Thr Pro Ile Gly Leu Gly Gln Ala Leu Tyr  
65 70 75 80

sequence listing.ST25.txt

Thr Thr Ala Gly Gly Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly  
85 90 95

Arg Val Ile Tyr Ala Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His  
100 105 110

Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Ala Gly Gly Gly Ala Arg  
115 120 125

Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly  
130 135 140

Gly Gly Ala Arg Gln Arg Thr Ser Ile Gly Gln Gly Gln Ala Leu Tyr  
145 150 155 160

Thr Thr Ala Gly Gly Gly Ala Thr Ser Ile Thr Ile Gly Pro Gly Gln  
165 170 175

Val Phe Tyr Arg Thr Gly Ala Gly Gly Gly Ala Ser Ile Arg Ile Gln  
180 185 190

Arg Gly Pro Gly Arg Ala Phe Val Thr Ile  
195 200

<210> 30  
<211> 368  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic fragment that codifies for MEP TAB9. Restriction sites  
XbaI and BamHI are introduced.

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tggtgcgcg ccaaggtatca ccaaggggtcc aggccgcgtc atttacgcca ccgcgggcg 180  
cggtgccccgt aagcgatatcc acattggcccc aggccgtgca ttctatacta cagcaggtgg 240  
tggcgcacgt aaacgcatca ctatgggtcc tggtcgcgtc tattacacga ccgctggcg 300  
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cgggatcc 368

<210> 31  
<211> 5  
<212> PRT  
<213> Neisseria meningitidis (group B)

<400> 31

sequence listing.ST25.txt

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